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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Advanced Television Stations and Their Impact Upon the Existing Television Broadcast Service	)	MM Docket No. 87-268

COMMENTS
OF
FOX, INC.

Fox, Inc., (Fox) files these comments in response to the Commission Second Further Notice of Proposed Rulemaking in the above-referenced proceeding. Fox also is joining, as it has previously, the Joint Broadcaster Comments. These comments are filed to amplify a reference made at Footnote 15 of the Joint Broadcaster Comments:

> On the basis of preliminary ATV coverage analyses utilizing the TIREM propagation model, a model that takes into account terrain and other factors not accounted for in the f(50/50) curve propagation model, Fox believes that replication may be more difficult to achieve than the f(50/50) curve propagation model would predict. These analyses also indicate, however, that replicating NTSC coverage areas by extending ATV service to the same total populations covered by each existing station may be achievable.

Joint Broadcaster Comments at p.14, n.15.

Fox indeed has undertaken coverage analyses using the Terrain Integrated Rough Earth Model (TIREM), software that takes into account factors such as terrain, frequency effects of channel number and the radio refractive index, yielding a much

more realistic appraisal of reception than the traditional f(50/50) curves. TIREM was created by the Electromagnetic Compatibility Analysis Center (ECAC) in Annapolis, Maryland. ECAC is a government agency whose primary work is for the Department of Defense. The TIREM model is based upon the Longley-Rice and Longley-Reasoner models created by the Institute of Telecommunications Sciences (ITS) in Boulder, Colorado. ITS is a part of NIST.

We undertook this analysis out of a concern the traditional f(50/50) curves, whose predictive accuracy is questionable beyond 30 miles, a fact recognized in the Commission's own rules (47 CFR 73.683(b)), are not a precise enough tool to provide reliable information regarding potential ATV coverage areas. We believe that our results show this concern to be justified and indicate that a more sophisticated propagation model than the f(50/50) curves must be used in allocating and assigning ATV channels.

We analyzed the predicted coverage patterns for two stations sited at the World Trade Center in New York. Channel 5, WNYW, licensed to New York City, and Channel 41, WXTV, licensed to Paterson, New Jersey. The attached coverage maps were prepared in two ways for each station. First, Grade "B" coverage was predicted using the traditional f(50/50) curves. See Figures 1 and 2. Then, a second Grade "B" coverage prediction was done with the TIREM propagation model using real terrain measured at

0.5 km intervals and the radio refractive index, N, data for February from Bean, et al., of NBS Monograph 4, October, 1959. See Figures 3 and 4. Using N and a local average terrain height for the entire service area of 50 meters AMSL, a k of 1.366 was derived. As with the FCC curves, 50% of the locations for 50% of the time was used by TIREM with a 95% Confidence to make the coverage prediction.

The difference between predicted coverage using the f(50/50) curves and TIREM, which we believe to be much more accurate, is remarkable.

We plan to use TIREM our results with actual measured data from the ATTC as it becomes available. Thus far, preliminary analyses using data that has been made public from testing of the General Instruments Digicipher System is consistent with our NTSC results.

It appears from our analysis, which is preliminary only at this stage, that it will be difficult to replicate coverage areas of present NTSC stations using shape and size of coverage areas as the only criteria. When we integrated population into our models, however, we discovered that it might be possible to approximate numbers of people served by most stations, although in some cases these may be different people than those currently

served by each station. Thus, the concept of replicating current service must be conceived both in terms of population as well as shape.

Nevertheless, regardless of what allocation principle is chosen, we believe our results implicate a more fundamental issue: unless a more sophisticated propagation model is used than that contemplated at present, the ATV allocation process will be seriously flawed, because coverage predictions will significantly misstate actual ATV coverage areas. The reality simply will not reflect predicted results, and licensee and public viewer expectations will be frustrated. If the propagation model used to allocate ATV channels cannot be relied upon to predict coverage areas with a reasonable degree of accuracy, it is irrelevant what policy goals are sought to be attained in the allocation process, whether NTSC coverage replication, ATV coverage area maximization, equalization or some other principle, as the objective sought to be achieved by a particular policy will bear little relation to actual results. We will have fooled ourselves and disserved the public.

The best results can be achieved by engineering each ATV station individually, as is done in the AM service, and using a propagation model that takes into account factors including terrain, frequency effects of channel numbers and the radio refractive index. To apply a replication model taking population

into account, power and antenna height can be adjusted. We urge all parties--the Advisory Committee, MSTV and the Commission--to pursue such a course, so that the interest of the public in obtaining access to advanced television is effectively and efficiently served.

Respectfully submitted,

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November 16, 1992

Figure 1

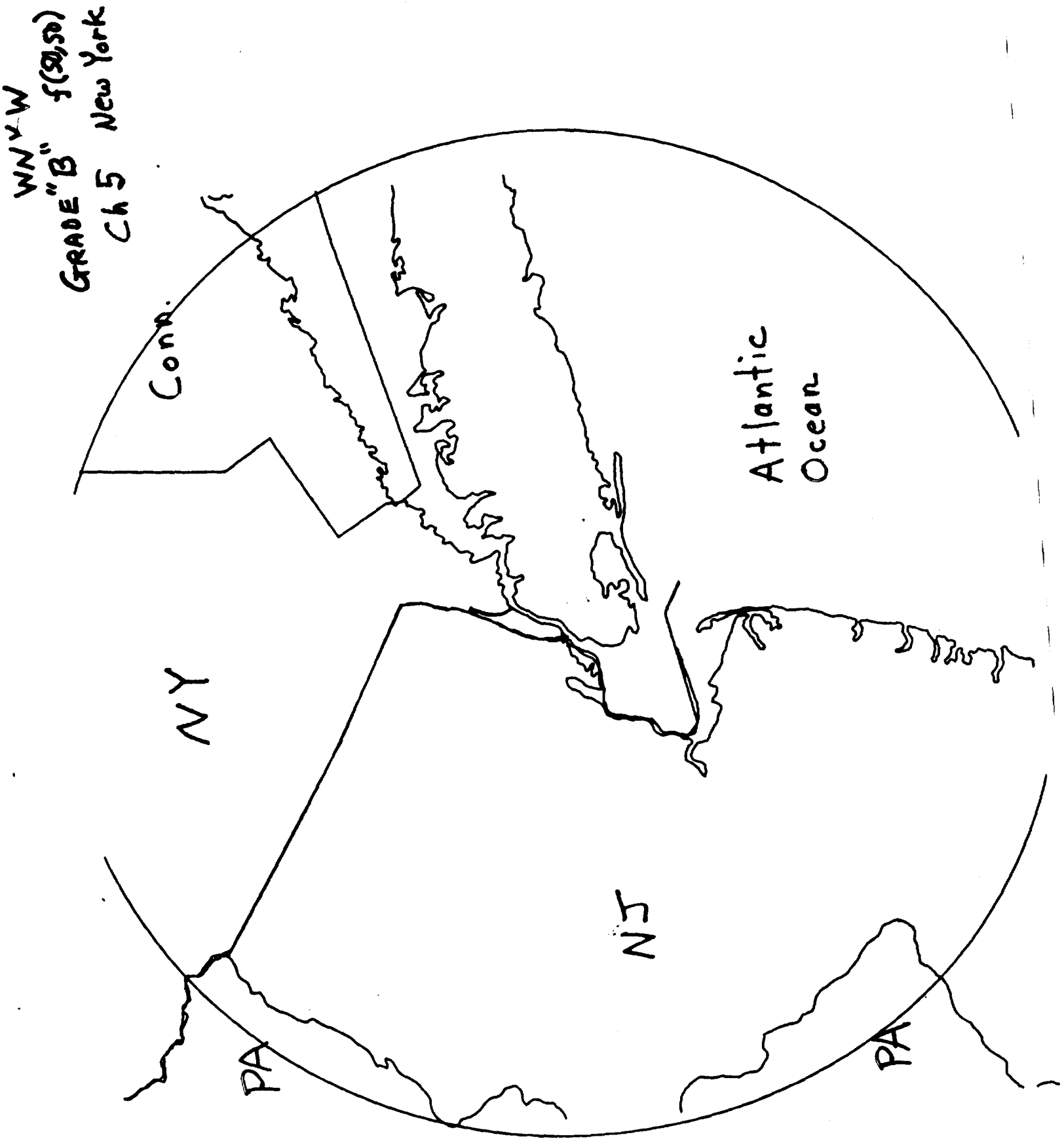

WNYW
GRADE "B" f(50,50)
Ch 5 New York
Conn.
Atlantic
Ocean
NY
NJ
PA
PA

Figure 2

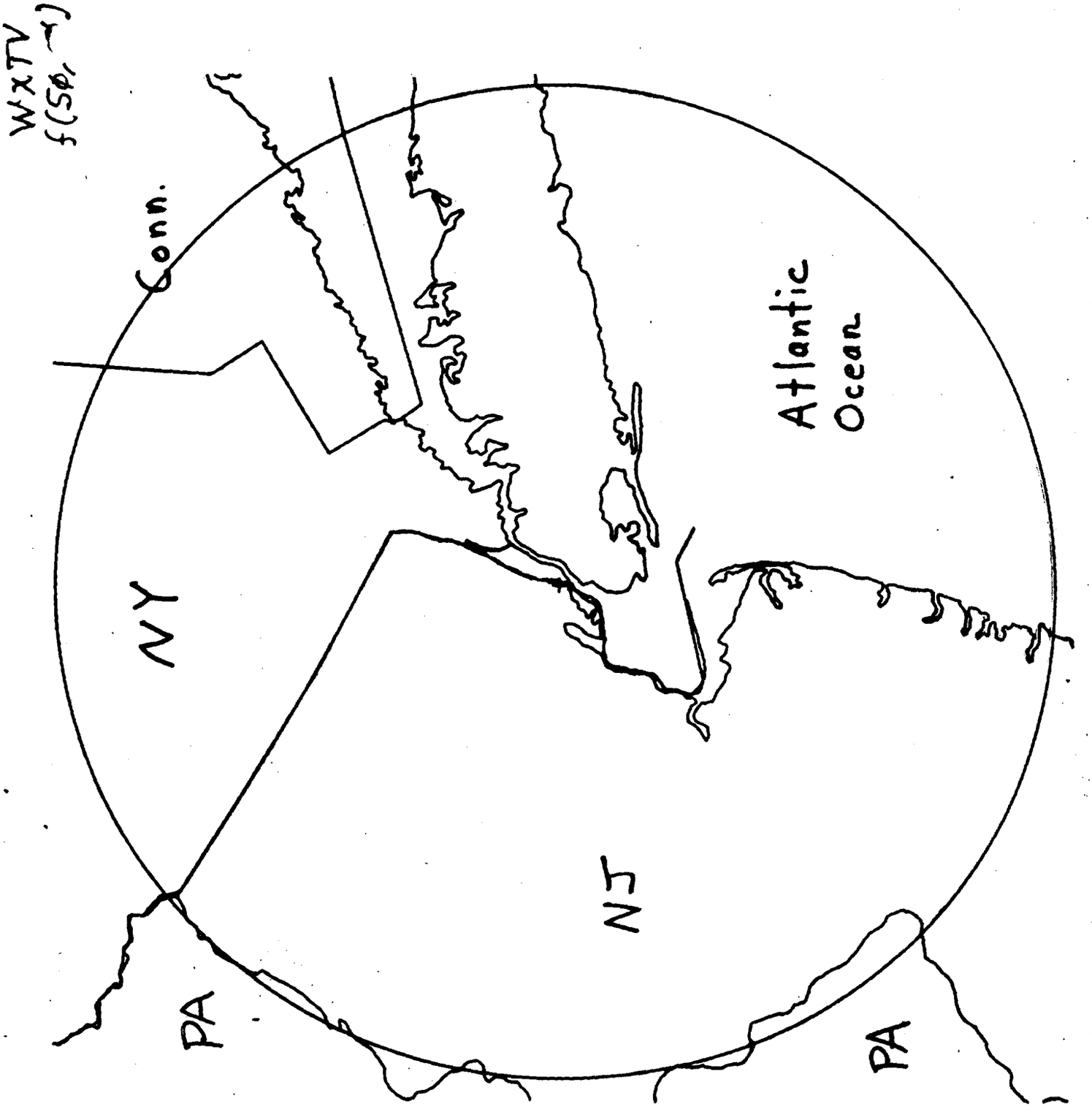
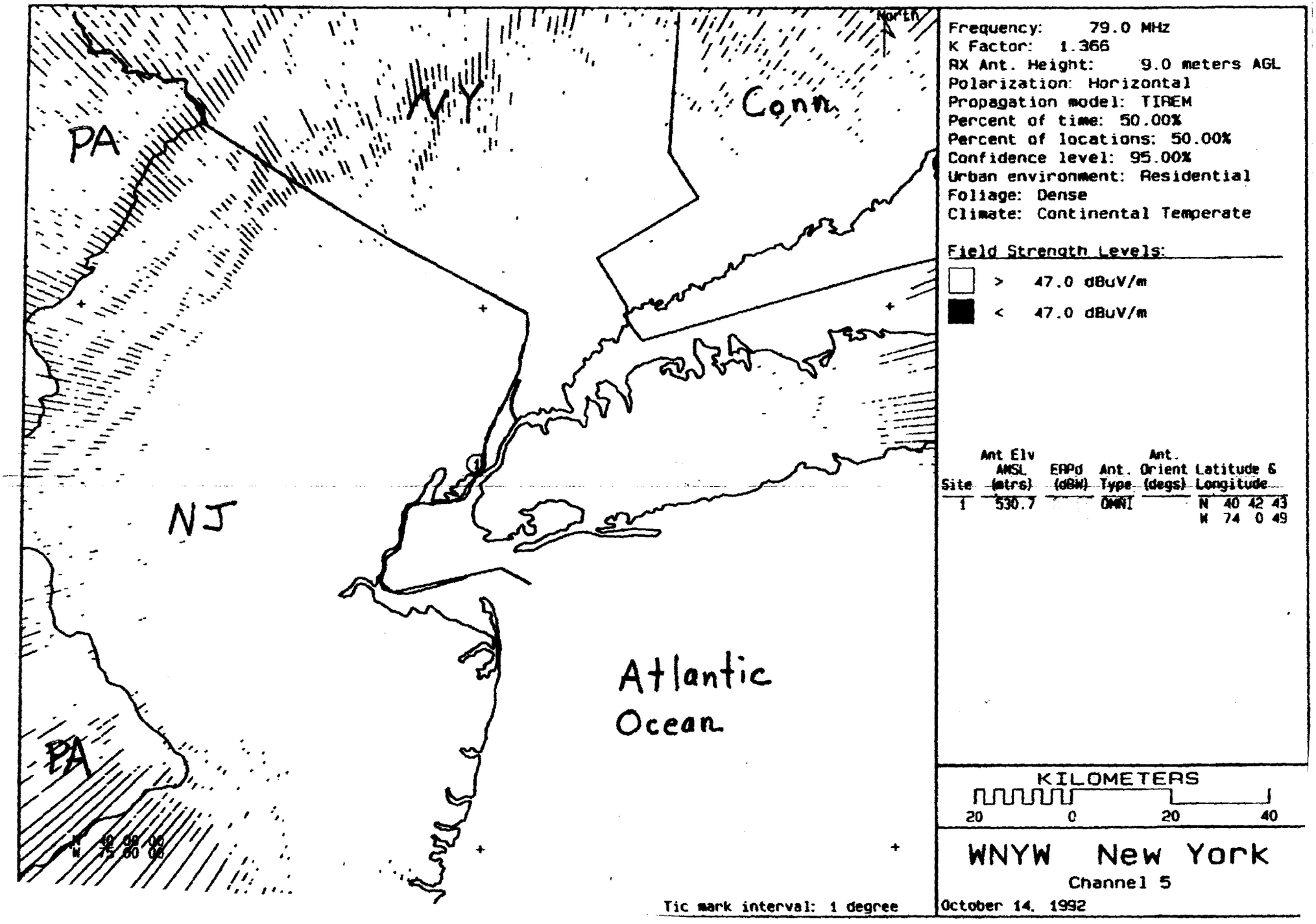
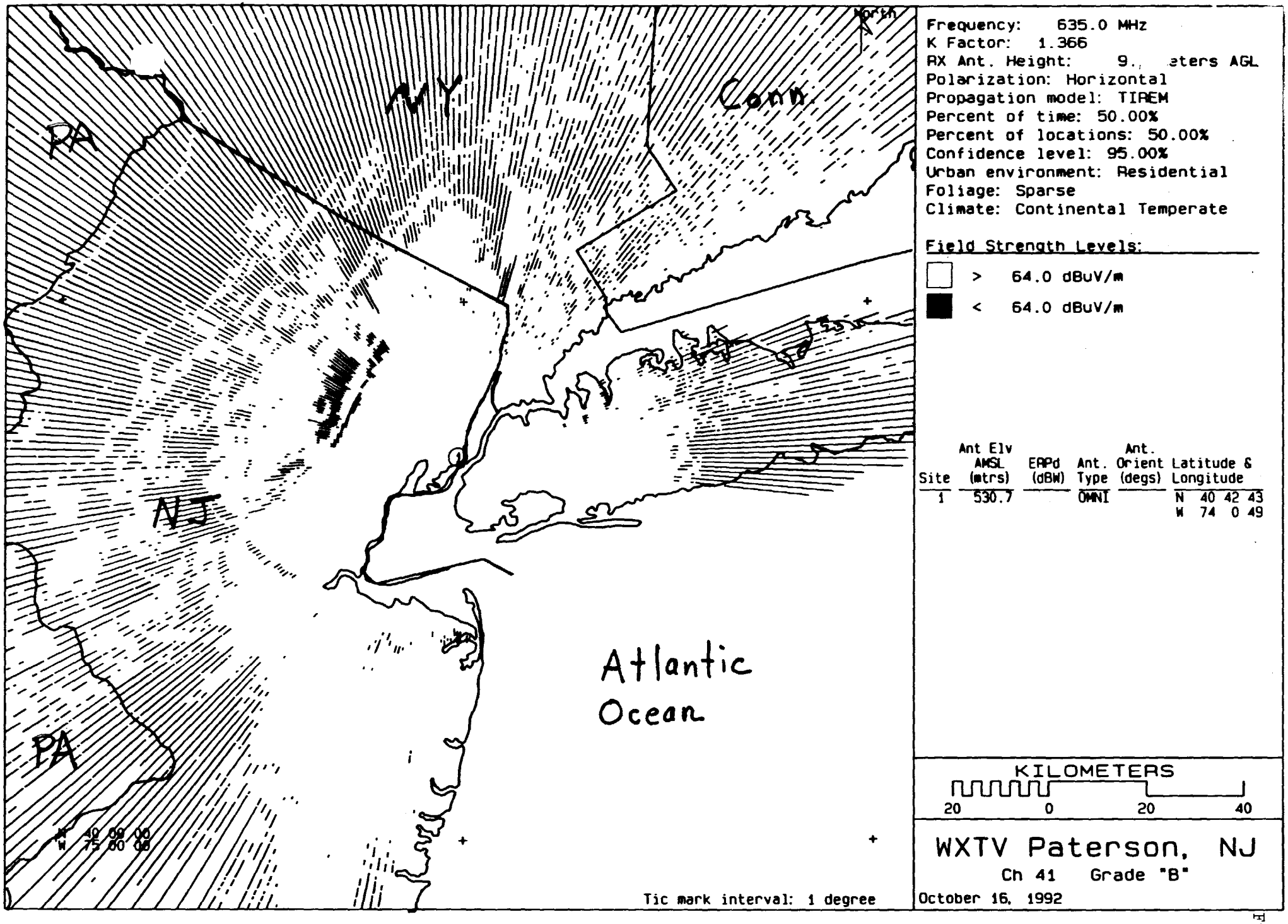


Figure 3


North
PA
NY
Conn
NJ
Atlantic
Ocean
PA
W 40 00 00
W 75 00 00
Tic mark interval: 1 degree
Frequency: 79.0 MHz
K Factor: 1.366
RX Ant. Height: 9.0 meters AGL
Polarization: Horizontal
Propagation model: TIREM
Percent of time: 50.00%
Percent of locations: 50.00%
Confidence level: 95.00%
Urban environment: Residential
Foliage: Dense
Climate: Continental Temperate
Field Strength Levels:
> 47.0 dBuV/m
< 47.0 dBuV/m
Site | Ant Elv AMSL (mtrs) | ERPd (dBW) | Ant. Type | Ant. Orient (degs) | Latitude & Longitude
1 | 530.7 | | OMNI | | N 40 42 43
W 74 0 49
KILOMETERS
20 0 20 40
WNYW New York
Channel 5
October 14, 1992



Frequency: 635.0 MHz
K Factor: 1.366
RX Ant. Height: 9. eters AGL
Polarization: Horizontal
Propagation model: TIREM
Percent of time: 50.00%
Percent of locations: 50.00%
Confidence level: 95.00%
Urban environment: Residential
Foliage: Sparse
Climate: Continental Temperate

Field Strength Levels:

> 64.0 dBuV/m

< 64.0 dBuV/m

Site	Ant Elv AMSL (mtrs)	ERPd (dBW)	Ant. Type	Ant. Orient (degs)	Latitude & Longitude
1	530.7		OMNI		N 40 42 43 W 74 0 49

KILOMETERS
20 0 20 40

WXTV Paterson, NJ
Ch 41 Grade "B"
October 16, 1992

Figure 4